

Modality Translation on the Grid

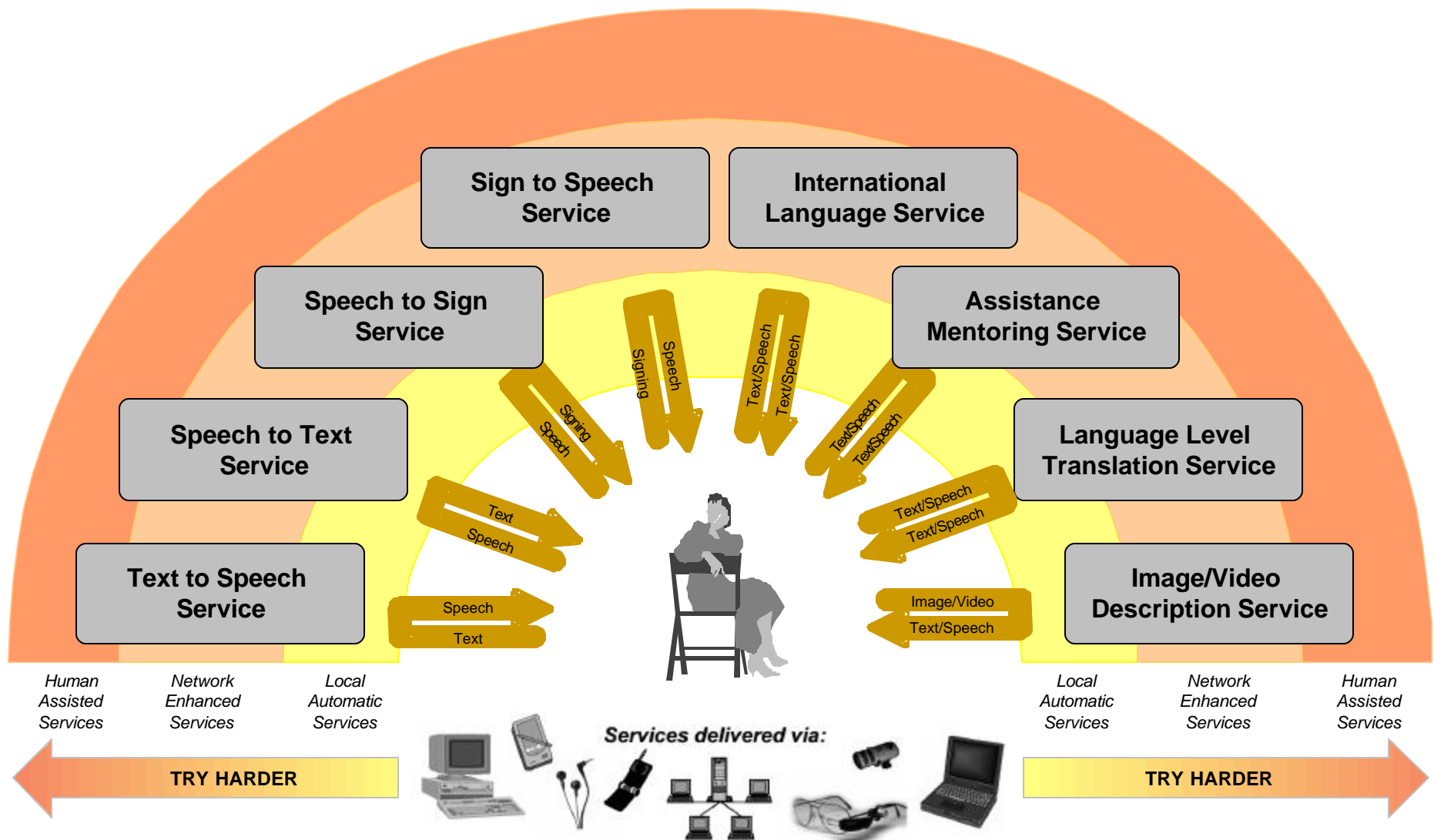
Network-Enabled Services on Demand
For People With and Without Disabilities



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Network-Enabled Services on Demand



Who are the Beneficiaries?

- People with permanent functional limitations such as hearing, visual and cognitive impairments;
- People with temporary functional limitations like a car driver;
- People using mobile devices with restricted input and output capabilities;
- People needing special help or world-class expertise.



Applications

- People with visual impairments
- Eyes-busy tasks
- Phone call - TTY to regular phone
- People with low reading skills

Technology

- Speech synthesis (local or network)
- Synchronized voice data (local or network)

Text to Speech
Service

Speech
Text



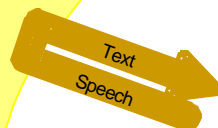
Applications

- People with hearing impairments
- Ears-free interaction for everyone
- Phone call - regular phone to TTY
- People who cannot type or cannot use a keyboard
- Speech interfaces (voice portals)

Technology

- Use of stenographic keyboard (human-assisted)
- Voice recognition (local or network)
- Revoicing with speech recognition (human-assisted)

Speech to Text
Service

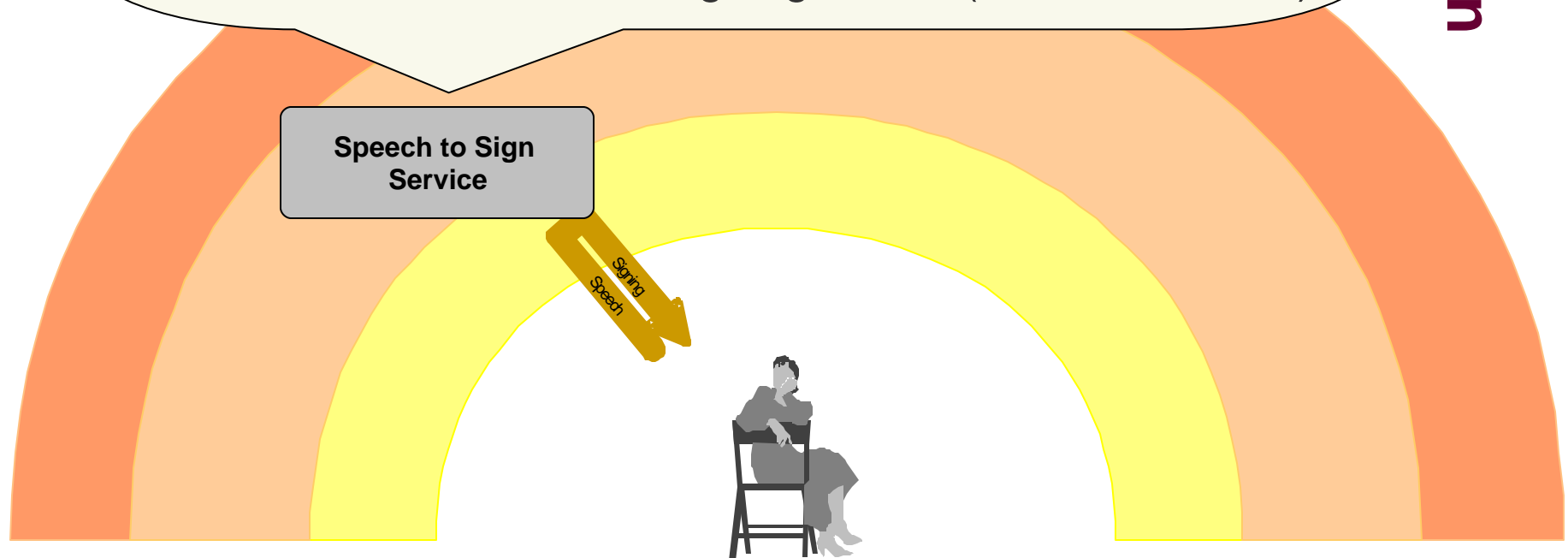


Applications

- People with hearing impairments (understanding sign language)
- Phone call - regular phone to phone with video output

Technology

- Sign language interpretation (human-assisted)
- Automatic translation & signing avatar (network or local)

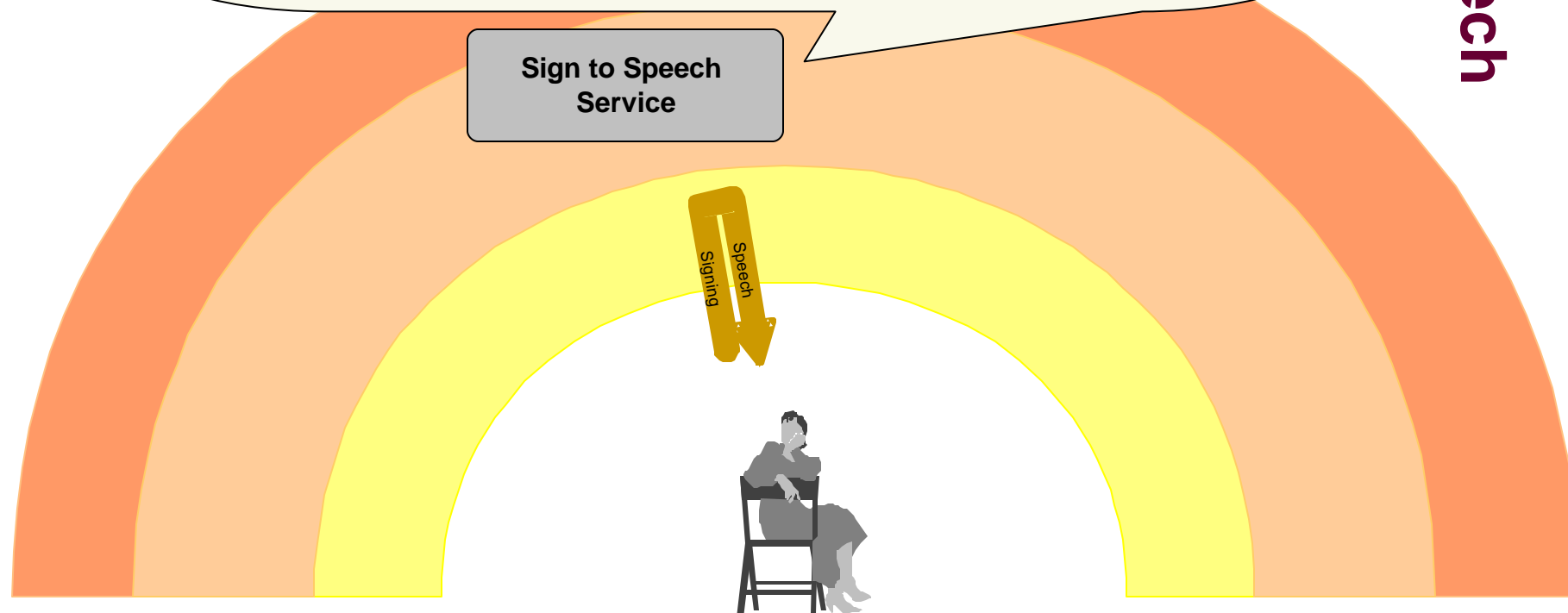


Applications

- People with hearing impairments
- Phone call - phone with camera to regular phone

Technology

- Sign language interpretation (human-assisted)
- Sign recognition & language translation (network or local)



Applications

- People with different languages
- Document, e-mail or web page translation
- Phone call, face-to-face, or collaborative session

Technology

- Language interpretation (human-assisted)
- Machine translation (network or local)

International
Language Service

Text/Speech
Text/Speech



Applications

- Learners and knowledge workers
- CACTUS Help Desk
- Job Counselor

Technology

- Help system - F1 key (local)
- Tech Support Knowledge Base (network)
- Help desk (human-assisted)

Assistance
Mentoring Service

TextSpeech
TextSpeech



Applications

- People with cognitive impairments
- Reference aide (e.g. GuruNet)
- Researcher writing for a general audience
- Medical patient consultation

Technology

- Language level transformation (human-assisted, network, or local)
- Thesaurus / “Term checker” (local or network)

Language Level
Translation Service

Text/Speech
Text/Speech



Applications

- People with visual impairments
- Indexing legacy archives for search

Technology

- Verbal description (human-assisted)
- Image analysis (network)



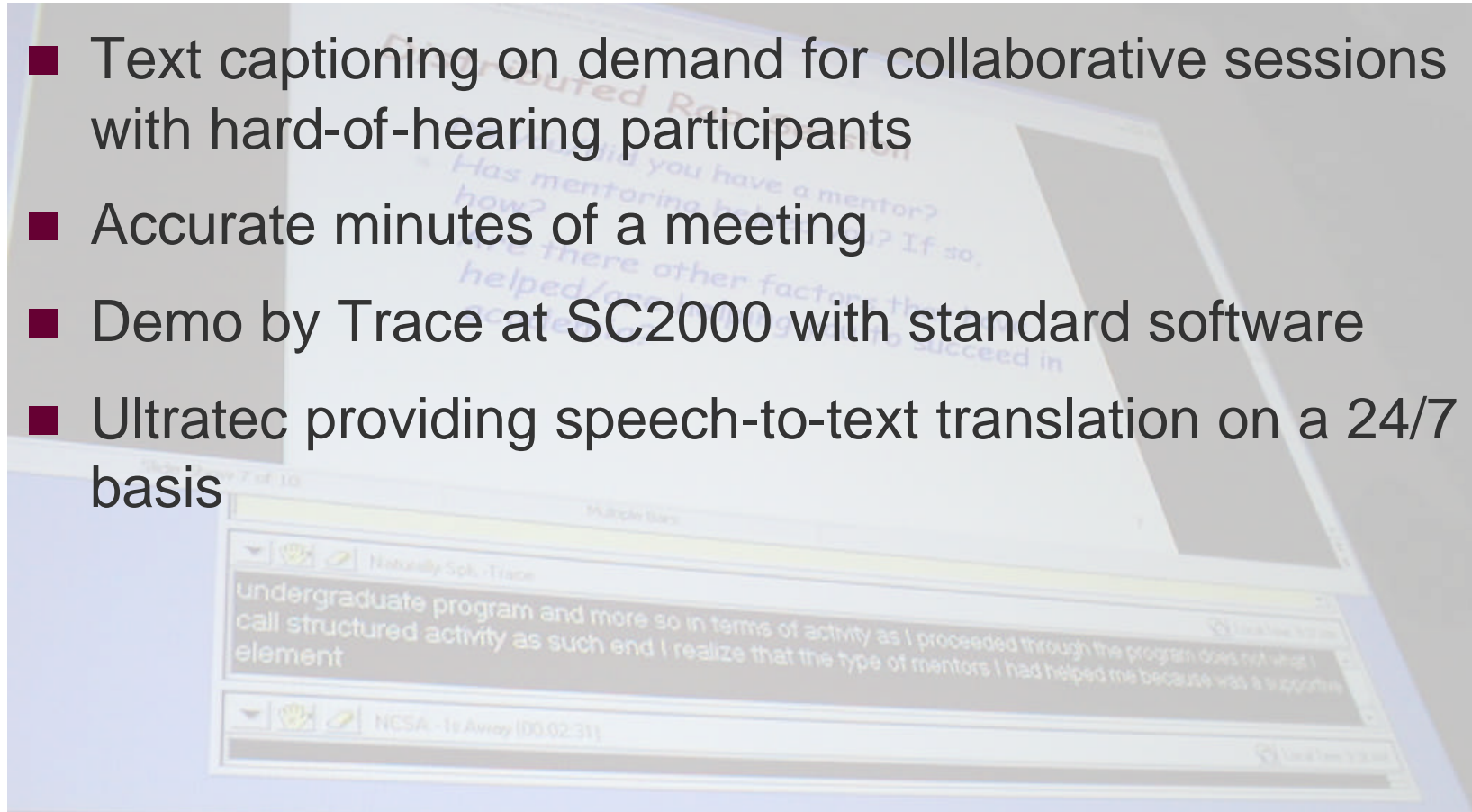
Image/Video
Text/Speech

Image/Video
Description Service

Speech to Text Service

A Short-Term Goal for the Access Grid?

- Text captioning on demand for collaborative sessions with hard-of-hearing participants
- Accurate minutes of a meeting
- Demo by Trace at SC2000 with standard software
- Ultratec providing speech-to-text translation on a 24/7 basis



Sign Interpretation Service

A Long-Term Goal for the Access Grid?



- Speech to sign and sign to speech translation on demand for collaborative sessions with sign language users
- Demo by Trace at SC99 with human sign interpreters
- Human assistance still needed
- Signing avatar technology emerges

Open Issues

- Communication infrastructure:
H.323 or Mbone?
- Platform-independent implementation:
Applet or Application?
- Close integration into the Access Grid (interface)

Thank you